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An Abnormal Form of Carya porcina, Nutt.—The accompanying Fig. 1 represents a longitudnal section between the two valves, and shows the hull, shell and kernel-zones of a nut from an abnormal form of *Carya porcina.* The hull breaks off abruptly into a neck which is often half an inch long. There is a long point of the shell projecting into the neck of the husk. The husk of this form splits at maturity into only two valves, one of which is entire and covers from two-fifths to one-half of the nut. The other valve varies from three-lobed, to three-parted, but the lobes are always grown together at the base. There is a prominent ridge, which runs around the nut between the valves, and which in some specimens amounts almost to a wing. There are also lesser prominences. A cross-section of the nut would have the appearance of a semi-circle attached to a semi-hexagon. The nut has a wrinkled appearance. The hull is cinereous in color or pale green. The leaves are glabrous, and large for this species, and of a darker green than those of the common form.

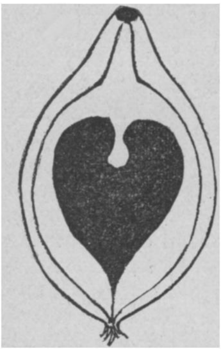

Fig. 1.

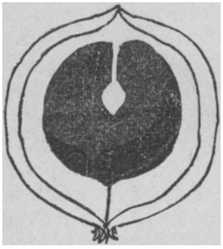

Fig. 2.

The specimens were found on a tree in the campus of the Arkansas Industrial University, and near a tree with nuts of the forms represented in section in Fig. 2.

Fayetteville, Ark. F. L. HARVEY.

Botanical Notes.

The Formation of Gum in Trees.—Sir James Paget has drawn attention in the *Medical Times* to some remarkable investigations made by Dr. Beijerinck in connection with the formation of gum in trees, and lately published by the Royal Academy of Sciences at Amsterdam. Dr. Beijerinck found that in the peach, apricot, plum, cherry, or other trees bearing stone-fruits, the formation of gum may be caused by inserting a portion of the gum under the edge of a wound through the bark. The observation that heated or long-boiled pieces of gum would not produce this effect, and that wounds made in the bark of the tree did not produce gum unless a portion was first introduced into it, led him to suspect that the formation of gum was due to the presence of bacteria or other living organisms. On microscopical investigation he found that only those pieces of gum containing spores of a highly organized fungus, belonging to the *Ascomycetes*, had the power of conveying the gum disease or gummosis, and that these spores, inserted by themselves under the bark, produced the same pathological changes as did the pieces of gum. The fungus has been examined by Professor Oudemans, who has ascertained it to be a new species, and has named it *Coryneum Beijerinckii.* Its chief characters consist in the fact that it has a cushion-like stroma, composed of a bright brown parenchyma, on which stand numerous conidia having colorless, unicellular and very slender stems, about as long as themselves. The conidia are small, cask-shaped, about one-third of a millimetre in length, and usually divided by slightly constricting septa into four cells, of which the two terminal are longer than the two middle ones. From these cells germinal filaments may proceed, from which are developed brown, thick-walled and many-celled mycelia. The first symptom of the gum disease is the development of a beautiful red color around the wound, due to the formation of a red pigment in one or more of the layers of the cells of the bark. Dr. Beijerinck believes that the fungus produces a fluid of the nature of a ferment, which penetrates the adjacent structures, since the disease extends beyond the parts in which any trace of the fungus can be detected. This ferment he believes to act on the cell-walls, starch granules and other constituents of the cells, transforming them into gum and even changing into gum the *Coryneum* itself. The influence of this fluid is also exerted in the cambium, causing the formation of morbid parenchyma, the cells being cubical or polyhedral, thin-walled and rich in protoplasm which is in its turn transformed into gum. It is further stated that "a similar disease produces gum arabic, gum tragacanth, and probably many resins and gum-resins." Gum tragacanth is known to be produced by the pith as well as the bark of the stem, and to ooze out from the pith when the stem is cut; and if it be indeed due to a disease it would seem as if the disease infects the whole plant. Gum, moreover, may be found in the uninjured husk of the almond, and it seems at first sight more probable that the irritation caused by a fungoid parasite should cause a greater flow of the natural product, just as the irritation caused by an insect causes the development of galls.

Tuberous Species of Solanum.—A paper upon this subject was read by J. G. Baker at a meeting of the Linnean Society on January 17th.

There have been about nine hundred species described as belonging to the genus, which, however, Bentham and Hooker would reduce to about seven hundred. Only a very small proportion of these has tuberous underground stems, this section including, according to Dunal's monograph in De Candolle's 'Prodromus,' twenty species, all natives of the South American continent, and as far north as Mexico and Texas. These twenty species Mr. Baker thinks should be reduced to six, with well-marked specific characters. While, from a botanical point of view, the range of *Solanum tuberosum* has been unduly narrowed by separating from it forms which are not specifically distinct, from a popular point of view it has, on the other hand been erroneously extended, from the fact that the late Mr. Darwin, in his 'Voyage of the Beagle,' described the potato as growing as far south as 50° S. lat. But Mr. Baker has clearly determined that the species gathered there by Mr. Darwin was not *Solanum tuberosum*, but a quite distinct species, *S. Maglia*. The geographical range of the true *S. tuberosum* extends from Chili to Mexico, though it is doubtful to what extent it is native in equatorial regions, having been cultivated from time immemorial by the Indians. Besides *S. Maglia*, the most important of the tuberous species are *S. Commersoni*, widely dispersed through Uruguay and Paraguay, and *S. Jamesii*, a native of New Mexico. The tubers of the later species are, however, very small, not much larger than a hazel-nut. The remaining species are but little known, and probably are of no economic value.

Mummy Garlands.—In *Nature*, Dr. G. Schweinfurth gives an account of some new botanical discoveries made by him in connection with the mummies of the twenty-first Egyptian dynasty, found at Deri-el-Bahan. In the floral wreath on the mummy of the Princess Ugi-Khouni were found folded leaves of a willow, *Salix Safsaf*, perfect flowers of the corn-poppy (*Papaver Rhœas*, var. *genuina*), flower-heads of *Centaurea depressa* and of *Picris coronopifolia*. The flowers of *P. Rhœas* appear to have been gathered in an unopened condition to prevent the petals from falling, and are in so good condition that Dr. Schweinfurth remarks that so perfect and well-preserved specimens of this fragile flower are rarely to be met with in herbaria. It is worthy of note, too, that the character of this variety of the poppy, var. *genuina*, although gathered more than three thousand years ago, are identical with those of the same variety known at the present day. With respect to *Picris coronopifalia*, the author remarks that not a single peculiarity is apparent by which it might be distinguished from the recent small form with low spreading branches now so common on the outskirts of the desert. From the occurrence of this flower in the wreaths it is possible to conjecture that the burial of the princess took place in March or April, since there would have been considerable difficulty in obtaining the flowers after the latter month. It has also been determined by capsules of the linseed plant found in a Theban tomb of the twelfth dynasty, 2,200–2,400 B.C., that the flax used by the ancient Egyptians was derived from *Linum humile*, Mill., and that the mustard oil used by them was derived from one of the two varieties of *Sinapis arvensis*, viz., *S. Allionii*, Jacq., or *S. turgida*, Del., both of which are still common in Egypt.

Solid Pigments in Cell-sap.—The petals of flowers are far more often colored by a pigment soluble in the cell-sap than by one in a solid, granular form. Of 200 species examined by P. Fritsch, only 30 contained solid pigments in the cells either of the petals or of the fruits.

Far the most common of these solid pigments is yellow, much the greater number of yellow flowers, including nearly all the yellow Compositæ, being indebted for their color to substances of this nature. Exceptional instances of soluble yellow pigments occur in the petals of *Dahlia variabilis*, *Althœa Sieberi* and *Tagetes*, and in the hairs of many species. Solid yellow pigments are described in *Impatiens longicornu*, where they vary greatly in size and form, in *Tropæolum majus*, where the various shades of color in the flower are due to a substance of this description in a brown cell-sap, in *Œnothera biennis*, *Cerinthe aspera*, *Calendula officinalis*, *Tagetes glandulifera*, *Viola tricolor*, *Rudbeckia laciniata*, *Digitalis ambigua* and *Salpiglossis variabilis*. The particles of the pigment are often in a state of active molecular movement; they are always colored green by iodine and are soluble in concentrated sulphuric acid with a deep blue color. In some other chemical reactions they vary. The pigment appears to be always imbedded in a matrix of protoplasm. A solid red pigment was observed in the fruits of *Rosa canina*, *Pyrus aucuparia*, *Convallaria majalis*, *Bryonia dioica* and in the acid of *Euonymus latifolius* and *Europæus*, *Celastrus scandens* and *Taxus baccata.*

The red pigment in the cortical portion of the root of the carrot is of a very peculiar kind, resembling long, pointed crystals.

Insoluble violet pigments are rare, but occur in *Thunbergia alata* and *Delphinium bicolor;* while blue granules are found in the fruit of *Viburnum Tinus.* Brown insoluble pigments were found only in the seaweeds, *Fucus vesiculosus* and *Furcellaria fastigiata.* The development of the colored granules does not end with their acting as pigments; after this period they go through a variety of changes of development or degradation. (*Journ.* Roy. Micros. Soc., from Pringsheim's Jahrb.).

Proceedings of the Torrey Club.—At the regular meeting of the Club Tuesday evening, January 8th, the President occupied the chair and twenty persons were present. The following officers were elected for the current year: President, J. S. Newberry; Vice-President, Addison Brown; Corresponding Secretary, Miss Maria O. Steele; Recording Secretary, A. Hollick; Treasurer, W. H. Rudkin; Editor, W. R. Gerard; Associate Editor, Benj. Braman; Curator, Miss E. G. Knight; Librarian, N. L. Britton. The annual reports of the various officers were read and accepted.

Dr. Britton exhibited specimens and read

A List of Plants collected by Mr. J. Albert Rudkin during a trip from Juno, on the coast, to Mt. St. Elias, Alaska, in the summer of 1883, as follows:—

Coptis asplenifolia, Salisb.; *Aconitum Napellus*, L., var. *delphinifolium*, Seringe; *Claytonia Siberica*, L.; *Spiræa Aruncus*, L.; *Geum macrophyllum*, Willd.; *Rubus Nutkanus*, Moçino; *Rubus pedatus*, Smith; *Poterium Sitchense*, Watson; *Tiarella trifoliata*, L.; *Tellima grandiflora*, Dougl.; *Epilobium coloratum*, Muhl.; *Epilobium latifolium*, L., var. GRANDIFLORUM *n. var.*—Stems strong, angled, their upper portions slightly canescent; leaves ovate-lanceolate, two and one-half inches long by one inch wide, bearing small, obtuse, remote teeth ; veins very apparent on the lower surface; flowers two inches broad when expanded; petals obovate, obtuse, three-quarters of an inch broad; peduncles axillary, canescent, erect, one inch long; pods woolly erect, truncate, about as long as the peduncles. A well-marked variety, probably not specifically distinct. There is a specimen of the same in the Torrey Herbarium from Sitka.

Fatsia horrida, Benth. & Hook.; *Cornus Canadensis*, L.; *Valerianella sylvatica*, Richardson; *Nabalus alatus*, Hook.; *Pyrola secunda*, L.; *Gentiana Douglassiana*, Boug.; *Romanzoffia Unalaschensis*, Cham.; *Mimulus luteus*, L.; *Spiranthes Romanzoviana*, Cham.; *Habenaria dilatata*, Gray.; *Prosartes trachycarpa*, Watson; *Tofieldia glutinosa*, Willd.; *Eriophorum polystachyon*, L., var. *angustifolium*, Gray, a form with only two or three spikes ; *Equisetum pratense*, L.; *Lomaria Spicant*, L.; *Phegopteris Dryopteris*, Fée; *Phegopteris polypodioides*, Fée.; *Aspidium spinulosum*, Swartz, var. *dilatatum*, Eaton, a small form; *Lycopodium Selago*, L.